

ONC Adopts Metadata Standards

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Introduction

Metadata is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource.¹ Metadata provides more information or detail about a piece of data. Metadata standards provide a format for the common understanding of the meaning or semantics of the data, to ensure the correct use and interpretation by both the data producer and user.

The Office of the National Coordinator for Health Information Technology (ONC) released an advance notice of proposed rulemaking (ANPRM) on August 5, 2011 that endorsed the adoption of metadata standards to support electronic health information exchange (HIE). The ONC requested comments from various providers and organizations that currently use the proposed metadata standards, and sought public comments on additional metadata categories, elements, and syntax that should be considered with the use of these metadata standards. In addition, the ONC solicited comments on the use of these metadata standards as part of the electronic health record (EHR) certification requirements to support Stage 2 of meaningful use under the Medicare and Medicaid EHR Incentive Programs.² The deadline for these comments was September 23, 2011.

The ONC seeks to create standards for patient data that can be attached to summary information for patients to download health information from a patient portal or to a personal health record (PHR), or for the transfer of a patient's health information from one health care provider to another. The ONC expects the metadata standards to increase the level of trust in the clinical information a provider receives through an HIE and expects patients will more easily be able to sort and re-share their own health information.³ The adoption of metadata standards will help to rapidly advance HIE across various exchange infrastructures.⁴

Background

The President's Council of Advisors on Science and Technology (PCAST) is an advisory group comprised of leading scientists, engineers, and health professionals who provide scientific and technical advice to the President and the Executive Office of the President. On December 8, 2010, the PCAST released a report entitled, *Realizing the Full Potential of Health Information Technology to Improve Healthcare for Americans: The Path Forward* (PCAST Report).⁵

The PCAST Report called upon the Federal government to facilitate the widespread adoption of a universal exchange language (UEL) that would allow the electronic transfer of health data while maximizing privacy by taking into consideration the types of data in use and identifying the sensitivity of this clinical information, accelerating the nation's progress toward an electronic HIE. The use of UEL would allow a person's health data to follow the individual, while giving patients control over who has access to their information. The PCAST recommendations would not require physicians to replace their existing EHR systems,⁶ and would not call for the creation of a centralized Federal database of people's health information or the assigning of Federal health care identifier numbers to individuals.⁷

The ONC asked that the Health Information Technology (HIT) Policy Committee form a workgroup to assess the PCAST Report's ONC-related recommendations. The workgroup assessed how implementing the recommendations could affect ONC's programs, and the potential approaches ONC could pursue to realize the vision described in the PCAST Report.⁸

The HIT Policy Committee presented a report with the findings from the work group to ONC in April 2011. The HIT Policy Committee first suggested that the ONC focus on facilitating the development and adoption of a minimal set of standards for metadata.⁹ These standards could be "wrapped

¹ National Information Standards Organization, *Understanding Metadata*, NISO Press, 2004. Available at: <http://www.niso.org/publications/press/UnderstandingMetadata.pdf>.

² *ONC seeks public comment on metadata standards*, CMIO, August 9, 2011. Available at: http://www.cmio.net/index.php?view=article&id=28983:onc-seeks-public-comment-on-metadata-standards&tmpl=component&print=1&page=&option=com_articles.

³ *Metadata standards inch closer to MU Stage 2 inclusion*, FierceEMR, August 11, 2011. Available at: www.fierceemr.com/print/node/9312.

⁴ Mary Mosquera, *ONC wants comments about metadata standards for EHRs*, Government Health IT, August 8, 2011. Available at: <http://www.govhealthit.com/news/onc-wants-comments-about-metadata-standards-ehrs>.

⁵ Executive Office of the President, President's Council of Advisors on Science and Technology, *Report to the President: Realizing the Full Potential of Health Information Technology to Improve Healthcare for Americans: the Path Forward*. December 2010. Available at: <http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-health-it-report.pdf>.

⁶ Rick Weiss, *PCAST Releases Health IT Report*, The White House, Office of Science and Technology Policy, December 8, 2010. Available at: <http://www.whitehouse.gov/blog/2010/12/08/pcast-releases-health-it-report>.

⁷ Ibid.

⁸ U.S. Department of Health and Human Services, Office of the Secretary, *Metadata Standards to Support Nationwide Electronic Health Information Exchange*, 45 CFR Part 170, RIN 0991-AB78, August 5, 2011, p. 12.

Available at: http://www.ofr.gov/OFRUpload/OFRData/2011-20219_PL.pdf.

⁹ The HIT Policy Committee uses the term metadata to mean "data about data" or "data that provides more information or detail about a piece of data."

around” or attached to a summary care record when a patient seeks to download their health information from a health care provider’s patient portal or when a patient directs his or her health care provider to transmit health information to a PHR.¹⁰

Metadata Standards

The HIT Policy Committee recommended the development of metadata standards for use in the following three categories:

1. *Patient identity* - data elements about a patient, which includes a patient’s full name, previous names with associated date ranges (as an optional element), date of birth, address, zip code and one type of patient identification (ID) data along with the origin of that ID;
2. *Provenance* - data elements about the source of the clinical data, which provides information on the “who, what, where and when” and includes a tagged data element (TDE), a time stamp, and digital signatures used to ensure the data has not been altered since its creation; and
3. *Privacy* - data elements include a privacy policy pointer and content elements descriptions such as data type and sensitivity.

The ONC commissioned the HIT Standards Committee to perform an in-depth analysis of several widely implemented standards that include metadata. After conducting a thorough analysis that examined the various data elements that each standard includes, the HIT Standards Committee presented the following categories of metadata that could be readily adopted as metadata standards:¹¹:

1. *Patient Identity Metadata* – Health Level 7 version 2 (HL7 V2) messages; Integrating the Healthcare Enterprise Cross Enterprise Document Sharing (IHE XDS) Metadata; Health Level 7 Clinical Document Architecture Release 2 (HL7 CDA R2); American Society for Testing and Materials (ASTM) Continuity of Care Record (CCR); Google CCR; and National Information Exchange Model (NIEM).
2. *Provenance Metadata* – NIEM, IHE XDS Metadata, HL7 CDA R2, and Clinical Data Interchange Standards Consortium (CDISC) standards related to providing the above information on provenance.
3. *Privacy Metadata* – Platform for Privacy Preferences (P3P), Enterprise Privacy Authorization Language (EPAL), Basic Patient Privacy Consents (BPPC), IHE XDS, and Clinical Document Architecture Release 2: and Patient Consent Directives (CDA R2 PCD) standards.

¹⁰ U.S. Department of Health and Human Services, Office of the Secretary, *Metadata Standards to Support Nationwide Electronic Health Information Exchange*, 45 CFR Part 170, RIN 0991-AB78, August 5, 2011, p. 13.

Available at: http://www.ofr.gov/OFRUpload/OFRData/2011-20219_PL.pdf.

¹¹ Ibid.

Two Pilot Programs

The ONC announced two pilot programs to test the metadata standards that state HIEs will use for patient information queries and personal health information data security. The first program is the *Query Health Initiative*, which will test the metadata standards for sending population-level health queries to multiple HIE partners through a standard interface, and receiving secure responses in return.¹² The ONC established three work groups¹³ for this initiative. The first, the business work group, will assess issues regarding privacy, security, consent, sustainability, data use arrangements, and best practices. The second, the clinical work group, will develop the use cases, functional requirements, standards for an information model, query syntax and results expression. The final workgroup, technical, is responsible for supporting the Query Health Initiative. This initiative was officially launched on September 5th.

The second program is the *Data Segmentation Initiative*, which will assess standards designed to let patients block the release of sensitive healthcare information. The goal of this program is to allow providers to share portions of an EHR while not sharing others, giving the patients the choice over what health information is shared by providers electronically.¹⁴ This initiative was officially launched on October 5th.

Adoption

The ONC believes that the use of metadata holds great promise and the adoption of metadata standards will help rapidly advance electronic health information exchange across a variety of different exchange architectures.¹⁵ The adoption of metadata standards will help patients and providers pull together large amounts of clinical data from disparate EHRs by allowing one to index, query, transmit, and re-assemble patient data for different sources. The two pilot programs will test the standards used for querying various data sources and analyze how providers can share portions of an electronic medical record while not sharing other parts from this record.

¹² S Jackson, *ONC Pushing HIEs to Test Metadata Standards*, FierceHealthIT, August 22, 2011. Available at: <http://www.fiercehealthit.com/story/onc-pushing-hies-test-metadata-standards/2011-08-22>.

¹³ Joseph Goedert, *ONC Tackling Population Data Query Issues*, Health Data Management, September 7, 2011. Available at: <http://www.healthdatamanagement.com/news/onc-ehr-query-health-hie-43146-1.html>.

¹⁴ Joy Pritts, Chief Privacy Officer, *ONC Launches Data Segmentation Initiative*, U.S. Department of Health and Human Services, September 19, 2011. Available at: <http://www.healthit.gov/buzz-blog/from-the-ondesk/ondc-launches-data-segmentation-initiative/>.

¹⁵ Mary Mosquera, *ONC Wants Comments About Metadata Standards for EHRs*, Government Health IT, August 8, 2011. Available at: <http://govhealthit.com/news/onc-wants-comments-about-metadata-standards-ehrs>.